

Appln. No. 10/821,684

Attorney Docket No. 10541-1973

## I. Amendments to the Claims

## 1. (Currently Amended) A system comprising:

a switched reluctance machine including a plurality of phases, each phase including a plurality of machine coils;

a plurality of sets of positive side switch circuits in electrical parallel connection, wherein each the positive side switch circuits [[is]] of each set are each electrically connected to a positive side of a machine coil of the ~~plurality of machine coils~~ same phase and configured to control the flow of current through the machine coil; and

a plurality of sets of negative side switch circuits in electrical parallel connection, wherein each the negative side switch circuits [[is]] of each set are each electrically connected to a negative side of a machine coil of the ~~plurality of machine coils~~ same phase and configured to control the flow of current through the machine coil.

2. (Original) The system according to claim 1, wherein each positive side switch circuit includes a first power switch and a first diode, and each negative side switch circuit includes a second power switch and a second diode.

3. (Previously Presented) The system according to claim 2, wherein the positive side of the machine coil is electrically connected between the first power switch and the first diode.

BRINKS  
HOFER  
GILSON  
& LIONE

BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599

Appln. No. 10/821,684

Attorney Docket No. 10541-1973

4. (Previously Presented) The system according to claim 3, wherein the negative side of the machine coil is electrically connected between the second power switch and the second diode.

5. (Original) The system according to claim 2, wherein the first and second power switches are MOSFET's.

6. (Original) The system according to claim 5, wherein the first and second power switches are N-channel MOSFETs.

7. (Original) The system according to claim 6, wherein a source of the first power switch is in electrical communication with a cathode of the first diode and a drain of the second power switch is in communication with an anode of the second diode.

8. (Original) The system according to claim 7, further comprising a power source, wherein a first side of the power source is in electrical communication with a drain of the first power switch and cathode of the second diode and a second side of the power source is in electrical communication with an anode of the first diode and a source of the second power switch.

9. (Original) The system according to claim 5, further comprising a first capacitor in electrical parallel connection with the first power switch and the

BRINKS  
HOFFER  
GILSON  
ALIONE

BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599

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Attorney Docket No. 10541-1973

first diode between a drain of the first power switch and an anode of the first diode.

10. (Original) The system according to claim 9, further comprising a second capacitor in electrical parallel connection with the second power switch between a source of the second power switch and a cathode of the second diode.

11. (Original) The system according to claim 10, wherein the first capacitor is mounted in close proximity to the first power switch and the second capacitor is mounted in close proximity to the second power switch, wherein the first and second capacitors are configured to provide DC line filtering and snubbing of switch off transients.

12. (Original) The system according to claim 1, wherein each positive side switch circuit includes a first and second power switch in electrical series connection and each negative side switch circuit includes a third and fourth power switch in electrical series connection.

13. (Previously Presented) The system according to claim 12, wherein a positive side of the machine coil is electrically connected between the first and second power switch.

BRINKS  
HOFER  
GILSON  
LIONE

BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599

Appln. No. 10/821,684

Attorney Doct et No. 10541-1973

14. (Previously Presented) The system according to claim 13, wherein a negative side of the machine coil is electrically connected between the third and fourth power switch.

15. (Original) The system according to claim 12, wherein the first, second, third, and fourth power switches are MOSFET's.

16. (Original) The system according to claim 15, wherein the first, second, third, and fourth power switches are N-channel MOSFETs.

17. (Original) The system according to claim 16, wherein a source of the first power switch is in electrical communication with a drain of the second power switch and a drain of the third power switch is in communication with a source of the fourth power switch.

18. (Original) The system according to claim 17, further comprising a power source, wherein a first side of the power source is in electrical communication with a drain of the first power switch and source of the third power switch and a second side of the power source is in electrical communication with a drain of the second power switch and a source of the fourth power switch.



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19. (Original) The system according to claim 12, further comprising a first capacitor in electrical parallel connection with the first and second power switch between a drain of the first power switch and a source of the second power switch.

20. (Original) The system according to claim 19, further comprising a second capacitor in electrical parallel connection with the third and fourth power switch between a source of the third power switch and a drain of the fourth power switch.

21. (Original) The system according to claim 20, wherein the first capacitor is mounted in close proximity to the first and second power switch and the second capacitor is mounted in close proximity to the third and fourth power switch, wherein the first and second capacitors are configured to provide DC line filtering and snubbing of switch off transients.

22. (Currently Amended) A system comprising:

a switched reluctance machine including a plurality of phases, each phase including a plurality of machine coils, the switched reluctance machine having a plurality of magnetic cores, each machine coil being wound around a corresponding magnetic core of the plurality of magnetic cores;

a plurality of sets of positive side switch circuits in electrical parallel connection, wherein each the positive side switch circuits ~~[[is]]~~ of each set are

BRINKS  
HOFER  
GILSON  
& LIONE

BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599

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each electrically connected to a machine coil of the ~~plurality of machine coils~~  
same phase, each positive side switch circuit including a first power switch and a  
first diode, the first power switch being in electrical connection with a positive  
side of the machine coil between the first power switch and the first diode; and

a plurality of sets of negative side switch circuits in electrical  
parallel connection, wherein ~~each~~ the negative side switch circuits ~~[[is]]~~ of each  
set are each electrically connected to a machine coil of the ~~plurality of machine~~  
~~coils~~ same phase, each negative side switch circuit including a second power  
switch and a second diode, the second power switch being in electrical  
connection with a negative side of the machine coil between the second power  
switch and the second diode.

23. (Original) The system according to claim 22, wherein the first and  
second power switches are MOSFET's.

24. (Original) The system according to claim 23, wherein the first and  
second power switches are N-channel MOSFETs.

25. (Original) The system according to claim 24, wherein a source of  
the first power switch is in electrical communication with a cathode of the first  
diode and a drain of the second power switch is in communication with an anode  
of the second diode.

BRINKS
HOFER
GILSON
LIONE

BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599

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Attorney Docket No. 10541-1973

26. (Original) The system according to claim 25, further comprising a power source, wherein a first side of the power source is in electrical communication with a drain of the first power switch and cathode of the second diode and a second side of the power source is in electrical communication with an anode of the first diode and a source of the second power switch.

27. (Original) The system according to claim 22, further comprising a first capacitor in electrical parallel connection with the first and second power switch between a drain of the first power switch and a source of the second power switch.

28. (Cancelled).

29. (Cancelled).



BRINKS HOFER GILSON & LIONE  
PO Box 10395  
Chicago, IL 60611-5599